

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### DRAWINGS ATTACHED

#### Improvements in or relating to Packed Towers for the purpose of Gas-Liquid Contacting

WE, CARL-ZEISS-STIFTUNG, a Foundation established under the laws of the German Federal Republic, trading as Jenaer Glaswerk Schott & Gen. of Hattenbergstrasse 10, Mainz, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a device for centering the downward flow of liquid in a packed tower for contacting a gas with liquid, and to the said packed tower containing such a device.

In packed towers, there is a tendency for liquid to flow down the walls of the tower and this liquid must be brought back to the centre of the tower at regular intervals.

This is generally achieved by means of a centering funnel. These centering funnels are placed at regular intervals between the tower rings along the length of the tower. Such centering funnels return the liquid flowing down the walls to the centre of the tower; this means an effective reduction of the cross-section of the tower at this part of the tower with the result that the rate of passage of gas through this part of the tower is relatively quicker than at other parts of the tower. Further, the centering by this means is not very efficient because the funnel openings cannot be made too small as otherwise too high a rate of flow of vapour would occur at the narrowest part of the funnel.

The present invention serves to avoid or minimise such disadvantages.

According to this invention there is provided a device for centering the downward flow of liquid in a packed tower for contacting a gas with liquid, which comprises a gutter shaped to correspond with the cross-section of the tower, a funnel having a cen-

tral opening to direct liquid flowing down the walls of the tower into the gutter, and a run-off pipe disposed centrally within the gutter to receive the liquid collecting in the gutter, the run-off pipe being in open communication with the underside of the gutter by means of a number of conduits permitting liquid to flow downwardly therethrough from the gutter into one run-off pipe. Expediently the number of conduits is 3. The conduits are preferably disposed symmetrically around the run-off pipe. Advantageously the device is constructed of glass or ceramic material.

By way of example, one form of this invention will now be described with reference to the accompanying drawings wherein:—

Figure 1 is a longitudinal sectional elevation of part of a tower containing a centering device in accordance with this invention;

Figure 2 is a side elevation of the centering device of Figure 1; and

Figure 3 is a plan view of the centering device shown in Figures 1 and 2.

The device consists of a ring shaped gutter (1) and a narrow run-off pipe (3) whose wall is in open communication with the underside of the gutter (1) by means of 3 conduits (2). Figure 1 shows a packed tower containing the centering device above which is mounted a funnel (4) having a large central opening in contrast to hitherto accepted practice. The liquid flowing down the walls of the tower flows over this funnel (4) into the ring shaped gutter (1) and from there passes downwardly into the run-off pipe (3) by means of the 3 conduits (2). The centering device can be placed immediately below an ordinary grating (5) or the packing material (6) or can be bedded down into the packing material (6). It will be seen from Figure 1, that a large free annular cross-section is offered for the passage of gas

upwards therethrough and yet the total condensate is mainly directed to the middle of the packed tower.

WHAT WE CLAIM IS:—

- 5 1. A device for centering the downward flow of liquid in a packed tower for contacting a gas with liquid, which comprises a gutter shaped to correspond with the cross-section of the tower, a funnel having a central opening to direct liquid flowing down the walls of the tower into the gutter, and a run-off pipe disposed centrally of the gutter to receive the liquid collecting in the gutter, the run-off pipe being in open communication with the underside of the gutter by means of a number of conduits permitting liquid to flow downwardly therethrough from the gutter into the run-off pipe.
- 10 2. Device according to Claim 1, wherein the number of conduits is 3.
- 15 3. Device according to Claim 1 or Claim
- 20

2, wherein the conduits are disposed symmetrically around the run-off pipe.

4. Device according to any preceding claim, which is constructed of glass or ceramic material. 25

5. Device according to Claim 1 substantially as herein described with reference to Figures 1 to 3 of the accompanying drawings. 30

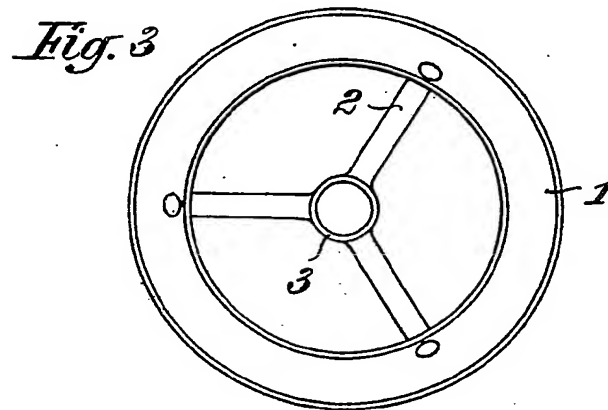
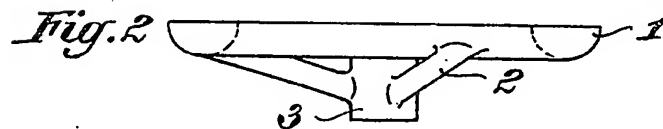
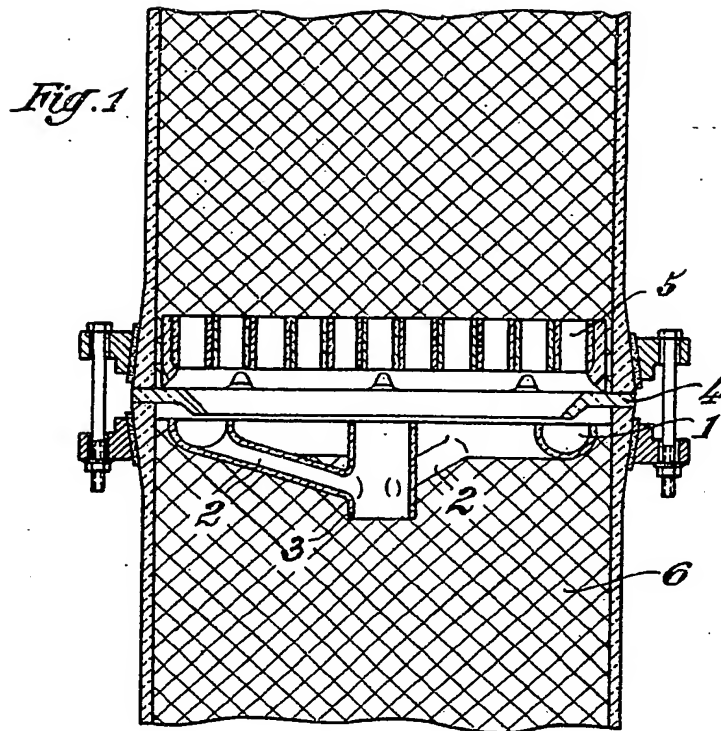
6. A packed tower for contacting a gas with liquid which comprises a device as claimed in any preceding claim.

7. Packed tower according to Claim 6 substantially as herein described with reference to Figure 1 of the accompanying drawings. 35

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